Dosimetry modeling in neutron-based radiotherapy for cancer was the topic of award-winning research by INL intern Stuart Slattery, who was recognized by DOE's Office of Science for improving the accuracy of such computations.

INL intern wins national DOE competition

by [Nicole Stricker](#), *INL Communications & Governmental Affairs*

Stuart Slattery hit a home run with his first summer internship away from his University of Wisconsin-Madison campus. Not only did his Idaho National Laboratory research topic match his interests perfectly, but his project was so successful it earned an award and scholarship from the U.S. Department of Energy.

Slattery won first place in the computational science division of the second annual Science and Energy Research Challenge (SERCh), a nationwide poster competition sponsored by DOE's Office of Science. The event was held at Oak Ridge National Laboratory on Nov. 8-9.

INL researcher Frank Roberto, who mentored another INL intern participating in the competition, also served as a SERCh judge for the past two years.

"As a judge, I've been amazed at the caliber of science these students are doing," he said. "It's impressive and reflects well on DOE's internship program."

DOE's Office of Science established the SERCh competition in 2008 to showcase research projects of DOE-funded undergraduate interns at the national laboratories. It is part of DOE's ongoing educational outreach efforts to encourage students to pursue careers in science, technology, engineering and math (STEM) areas.

This year, 97 students were selected to compete for scholarship awards ranging from $1,000 to $3,000 in six categories: computational science, energy, engineering, environmental science, life science and physical science. An additional $7,000 grand prize scholarship went to overall winner Cynthia Chen, a Lawrence Berkeley National Laboratory intern studying at the University of Texas at Austin.

Slattery won the computational science division of DOE's nationwide SERCh competition

The full list of SERCh winners

Computational Science — Stuart Slattery (UW-Madison), Idaho National Lab

Energy — Cynthia Chen (UT-Austin), Lawrence Berkeley National Lab

Engineering — Cameron Tracy (UC-Davis), Los Alamos National Lab

Environmental Science — Hefei Li (Columbia), Brookhaven National Lab

Life Sciences — Kristen Meyer (Washington State), Pacific Northwest National Lab

Two INL interns were chosen to participate in this year's competition. Montana State University senior Danielle Bouchard worked with Roberto on a project to tweak the genes of a heat- and acid-loving microbe that might be able to aid biofuel production. Bouchard is continuing work on the project as a collaborator while she finishes her biology/biotechnology degree.

"She has been one of the more exceptional students I've had because she was able to hit the ground running," Roberto said.

Slattery, a UW senior, spent his summer working with INL researcher Dave Nigg to improve the accuracy of radiation transport computations used for dosimetry modeling in neutron-based radiotherapy for cancer.

"I was thrilled," Slattery said of the win. "I guess I didn't expect it, just because of the high quality of the work the other students had done."

During his INL internship, Slattery worked on a project related to an experimental form of cancer treatment called Boron Neutron Capture Therapy. Because it potentially delivers a highly lethal form of radiation directly to cancer cells without damaging surrounding cells, this process could be useful for certain inoperable cancers that do not respond well to standard radiotherapy.

Slattery's computational project focused on radiation transport analysis, which is key to delivering an accurate dose of the radiation. His work will help improve radiation dose calculations for a new neutron beam constructed at the University of Missouri Research Reactor, Nigg said, which will

now allow researchers to start testing on animals.

"His work will enable us to use the beam we've constructed more effectively," Nigg said.

The project was part of a larger collaboration with the University of Missouri Center for Nano- and Molecular Medicine and the Radiation Pathology Division of the National Atomic Energy Commission of Argentina. And Slattery's contribution in computational radiation transport was exactly the sort of work he hopes to one day pursue professionally.

"He's one of the best interns I've ever had," Nigg said. "I was really glad to see him win this award."

But Nigg and Roberto also deserve some recognition, said Anne Seifert, INL's STEM coordinator and Education Director for DOE's Office of Science.

"It is through the internship programs and the influence of great mentors like David Nigg and Frank Roberto that we help educate and interest capable young people in joining our national laboratories to develop the solutions of tomorrow," she said. "It is the students like these that are among the best and the brightest."

Read more about INL's Boron Neutron Capture Therapy research.

Read more about the work of INL researcher Frank Roberto.

Feature Archive

INL intern Danielle Bouchard (white cap) was chosen to compete based on her work with microbes from Yellowstone National Park.